

The opinion in support of the decision being entered today is not binding precedent of the Board.

Paper 17

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte TONI DOCKNER, GERHARD NESTLER,
HOLGER HERBST, HELMUT LERMER, HANS MARTAN,
HERBERT VOGEL and HERBERT EXNER

Appeal 1997-1635
Application 08/319,667¹

Before: WINTERS and WILLIAM F. SMITH, Administrative Patent Judges, and McKELVEY, Senior Administrative Patent Judge.

McKELVEY, Senior Administrative Patent Judge.

MEMORANDUM OPINION and ORDER
Decision on appeal under 35 U.S.C. § 134

The appeal is from a decision of the Primary Examiner rejecting claims 1-10. We affirm.

¹ Application for patent filed 7 October 1994. Applicants claim priority under 35 U.S.C. § 119 of German patent application P 43 35 172.7, filed 15 October 1993. The real party in interest is BASF Aktiengesellschaft.

A. Findings of fact

The record supports the following findings by a preponderance of the evidence.

The claims

1. The claims on appeal are claims 1-10.
2. Applicants tell us that claims 1-10 stand or fall together (Appeal Brief, page 3).
3. Independent claim 1 reads (matter in brackets, indentation and paragraph numbering added):

A process for purifying a (meth)acrylic acid [i.e., an acrylic acid or a methacrylic acid (specification, page 1, lines 13-14)] contaminated with aldehydes,

[1] in which a primary amine [i.e., a compound containing at least one NH_2 group (specification, page 1, lines 14-15)] or a salt thereof is added to the (meth)acrylic acid

[2] and the (meth)acrylic acid is separated from the mixture^[2] by distillation,

[3] wherein, in addition to the added primary amine or its salts, at least one organic sulfonic acid or one of its salts is added to the (meth)acrylic acid

² There is no antecedent in the claim for "the mixture".

contaminated with aldehydes, before the treatment by distillation.^[3]

The invention described in the specification

4. "(Meth)acrylic acid" means acrylic acid or methacrylic acid (specification, page 1, lines 13-14). For convenience, we will limit our discussion to methacrylic acid.

5. Methacrylic acid can be made by a catalytic gas-phase oxidation process (specification, page 3, lines 35-36).

6. Methacrylic acid produced by the process contains impurities including aldehydes (specification, page 2, lines 5-9).

7. The presence of impurities is often not desirable (specification, page 2, lines 17-18).

8. A prior art method for removing the impurities, particularly aldehydes, involves mixing (1) impure methacrylic acid containing aldehydes with (2) an amine followed by distillation (specification, page 2, lines 41-46; see also European Patent Application 0 270 999 A1 (published 15 June 1988), discussed infra).

³ There is no antecedent in the claim for "the treatment by distillation".

9. According to applicants, however, the prior art process involving use of amines leads to undesirable deposits in distillation columns (specification, page 3, lines 18-27).

10. Applicants sought to minimize deposits (specification, page 2, lines 34-40).

11. Applicants say they accomplish minimal deposits by use of an organic sulfonic acid and/or a salt thereof along with an amine.

12. According to applicants, the organic sulfonic acid "is *** added to the crude (meth)acrylic acid before the treatment by distillation" (specification, page 4, lines 1-4).

13. Apparently, the organic sulfonic acid is preferably added shortly before distillation of a mixture containing methacrylic acid, primary amine and aldehydes (specification, page 4, lines 13-22).

14. However, applicants also tell us that the organic sulfonic acid may be added before or simultaneous with the addition of the primary amine (specification, page 4, lines 22-24).

15. Applicants' specification contains examples⁴ relied upon to prove unexpected results.

16. Example 1⁵ (specification, page 8) describes an experiment in which only an amine (aminoguanidine bicarbonate) is mixed with a composition which appears to include impure methacrylic acid followed by separation of aldehydes in a distillation column. Following distillation, we are told that a bottom portion of the distillation column contains "extensive solid precipitate (russet sludge) necessitating shutting down the column after a mere 3 hours."⁶

⁴ Applicants rely on experimental data set out in the specification in support of the appeal. We likewise have relied on the data and found it material in rendering our decision. Moreover, in reaching our decision, we have made the following assumptions: (1) the data set out in the specification upon which applicants rely is based on actual experimentation, (2) the data is accurately set out in the specification and (3) the data is not based on prophetic examples [see Hoffmann-La Roche, Inc. v. Promega Corp., 1999 U.S. Dist. LEXIS 19059, Civil Action C-93-1748-VRW (N.D. Cal. Dec. 7, 1999) (Findings of Fact 56-60, 63-66, 69, 105-106, 112, 131 and 136 and Conclusions of Law 32 and 35)]. We also have relied on the fact that there is no other data known to applicants or the real party in interest which (1) would tend to contradict the experimental data set out in the specification and (2) was not called to our attention in the brief and/or reply brief on appeal [see 37 CFR § 1.56(b)(2)].

⁵ To fully understand Example 1, one skilled in the art would have to be an accomplished patent document archeologist with considerable talent for "digging" for, and successfully locating, foreign patent documents, and if successful in the "dig," probably be fluent in German to interpret what had been found. Example 1 refers to no less than four other patent documents, including those identified as (1) EP-B 58 927, (2) EP-B 297 445, (3) EP-A 297 445 and (4) GDR Patent 54,354, all of which may be in the German language.

⁶ As will become apparent, infra, a case can be made the European Patent Application 0 271 999 contradicts assertions made in applicants' specification.

17. Upon repeating the process using dodecylbenzene-sulfonic acid, along with the amine, applicants tell us that even after 48 hours "there was no solid deposit in the bottom" of the column.

18. Example 2⁷ is similar to Example 1. The use of an amine (again aminoguanidine bicarbonate) in combination with various organic sulfonic acids is said to reduce the amount of deposits from 400 mg (sans organic sulfonic acid) to 10 to 70 mg (depending on the organic sulfonic acid used).

The examiner's rejection

19. The examiner has rejected claims 1-10 as being unpatentable under 35 U.S.C. § 103(a) over "Japanese Patent '438 with or without Applicants' Disclosure of Admitted Prior art as illustrated by EP-A-270999 and JP-A 117 716/75" (Examiner's Answer, page 3).

20. Using our own somewhat amateur archeological skills, we have unearthed what we think is the meaning of:

- (1) Japanese Patent '438,
- (2) EP-A-270999 and

⁷ The archeology is less complicated with respect to Example 2; it refers to only two German patent documents.

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(3) JP-A 117 716/75,
none of which are written in English.

a. We have been able to decipher but two of the documents given that we have been favored with translations only of (1) and (2).

b. In the Examiner's Answer, a reference is made to prior art identified as:

"90 48438, Mitsubishi Rayon (Japan), 03-1984."

The "03-1984" would appear to straightforwardly translate into March 1984, both in English and Japanese.

c. We have a copy of PTO Translation No. 00-2259 in the file wrapper, prepared under the direction of the Scientific Library of the PTO, which in all respects appears to be translation of "Document No. 03-3646." But, what does "03-3646" have to do with "90 48438" cited by the examiner?

d. Buried underneath all the important papers in the file wrapper, we located--not without some effort--a curious one-page abstract attached to Japanese Patent Document 59-48438. A copy of the abstract accompanies this opinion as Appendix 1.

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e. The abstract makes a reference to what it calls a PATENT FAMILY. Listed as family members are the following two relatives.

(1) J59048438-A 84.03.19 (8417) (JP) and

(2) J91003646-B 91.01.21 (9107) (JP).

f. Based on our expedition through the record, we feel more or less comfortable in assuming that "90 48438" is the same as "03-3646", at least for the purpose of this appeal. So that--unlike us--the examiner, applicants and the public will not have to guess in the future, we attach as Appendix 2 a copy of a translation⁸ of Japanese Patent Application Document No. 03-3646 which we have consulted in deciding this appeal.

g. "EP-A-270999" probably means European Patent Application 0 270 999 A1, published 15 June 1988. PTO Translation No. 97-2570, prepared under the direction of the Scientific Library, (1) appears in the record, (2) is attached as Appendix 3 and (3) is the document which we have consulted in deciding the appeal.

⁸ Applicants also supplied a translation of Japanese Patent Application Document No. 03-3646. The translation supplied by applicants is not verified. Accordingly, we feel more comfortable relying on a translation provided by the Scientific Library.

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h. "JP-A 117 716/75", which is mentioned in applicants' specification (page 3, lines 14-16), would appear to be a reference to Japanese Patent Application Document No. 50-117716 bearing a date of 16 September 1975. The only copy in the record is in Japanese. Accordingly, we have had no occasion to consider "JP-A 117 716/75" in deciding the appeal.

Japanese Patent Application Document No. 03-3646

21. Japanese Patent Application Document No. 03-3646 (hereinafter **Japan**) describes a method for purification of methacrylic acid obtained by a gas-phase catalytic oxidation process using (1) sulfonic acid group-containing compounds and (2) primary or secondary amines (page 2, first paragraph; page 3, third paragraph).

22. According to Japan, it had been known to use sulfonic acid group-containing compounds to purify methacrylic acid (page 3, second paragraph). In this respect, reference is made in Japan to yet another Japanese Patent Application Document, identified as Japan Kokai 55-129239.

23. The sulfonic acid group-containing compounds include benzenesulfonic acid, p-toluenesulfonic acid and

strongly acidic cation-exchange resins having sulfonic acid groups (page 4, second full paragraph). Applicants, like Japan, explicitly describe the use of benzenesulfonic acid and p-toluenesulfonic acid (specification, page 4, lines 40-41).

24. The amine may be primary or secondary amine, including tetramethylene diamine or pentamethylene diamine (page 5, second and third paragraphs). Applicants, like Japan, explicitly describe the use of tetramethylene diamine and pentamethylene diamine (specification, page 6, lines 6-7). Both amines contain primary amino groups (NH_2). For example, tetramethylene diamine has the formula:



25. Japan explains the manner for carrying out its described process (page 6, third paragraph, through page 7, first paragraph):

The treatment with both compounds can be made in any order. It is preferable that the methacrylic acid-containing matter is treated with one compound [i.e., the sulfur or amine] followed by removing the residual compounds by distillation, etc., subsequently treated with the other compound(s).

[I]f the matter is first treated with a strongly acidic cation-exchange resin at first, it can be treated with a primary amine *** as it is because the strongly acidic cation-exchange resin and the treated solution can be simply separated.

The treatment solution thus obtained is purified by distillation, etc. according to ordinary methods.

26. Japan contains several examples. "Actual Example 1" (page 7) describes a process of adding a strongly acidic cation-exchange resin to impure methacrylic acid followed by addition of tetraethylene pentamine [an amine which contains both primary and secondary amino groups] followed by distillation.

27. "Actual Example 21" (page 12) describes a process of adding sulfuric acid to an impure methacrylic acid followed by distillation. Thereafter the amine is added and a second distillation occurs.

28. Differences, if there be any, are discussed in the Discussion portion of this opinion.

B. Discussion

1. Scope of applicants' claim 1

We are told in applicants' Appeal Brief (page 4) that

It must be kept in mind that the essential feature of *** [the] claimed process is the **joint** presence of a primary amine *** and an organic sulfonic acid in the crude (meth)acrylic acid under distillation.

The Federal Circuit said it best when it gave the following sage advice: "The invention disclosed in *** [the] written description may be outstanding in its field, but the name of the game is the claim." In re Hiniker Co., 150 F.3d 1362, 1369, 47 USPQ2d 1523, 1529 (Fed. Cir. 1998), citing Rich,⁹ Extent of Protection and Interpretation of Claims--American Perspectives, 21 Int' Rev. Indus. Prop. & Copyright L, 497, 499 (1990)("The U.S. is strictly an examination country and the main purpose of the examination, to which every application is subjected, is to try to make sure that what each claim defines is patentable. To coin a phrase, the name of the game is the claims."

There is nothing in claim 1 which requires the "joint" presence of the sulfonic acid group-containing compound and the amine. The claim requires the sulfonic acid group-containing compound to be added to the impure methacrylic acid

⁹ The late Giles Sutherland Rich, Circuit Judge, U.S. Court of Appeals for the Federal Circuit.

"before the treatment by distillation." It does not say the sulfonic acid group-containing compound must be present during distillation! Nor, contrary to counsel's argument, does the sulfonic acid group-containing compound have to be present along with the amine. A cursory dusting of the specification will reveal that applicants state that the organic sulfonic acid may "be added before" the amine. There is nothing in the specification which would preclude sequential treatment beginning with the organic sulfonic acid followed by distillation followed by addition of amine followed by a second distillation. There is nothing in the specification which requires the organic sulfonic acid to be present when any amine is removed by distillation albeit a preferred method may involve the joint presence of a sulfonic acid and an amine at the time of distillation.

We would also note that the language "organic sulfonic acid" as used in the specification would not appear to exclude an organic sulfonic acid ion-exchange resin of the type described by Japan. "[S]trongly acidic cation-exchange resins having sulfonic acid groups" (Japan, page 4, second paragraph) are organic sulfonic acids.

What claim 1 requires is (1) mixing an organic sulfonic acid with an impure methacrylic acid, (2) mixing an amine with impure methacrylic acid and (3) distilling the impure methacrylic acid with the amine present (i.e., the amine, but not the organic sulfonic acid, must be separated in the distillation). Nothing is said in claim 1 about the organic sulfonic acid being separated by distillation "jointly" with the amine.

Counsel's attempt to limit the scope of claim 1 to "the back 40 acres of the farm" fails upon penetrating analysis of the claim, in light of the specification. Regretfully for applicants, it is manifest that claim 1 actually covers the "whole farm." We now turn to the details of the "farm" where, as will become apparent below, Japan describes the "farm's" principal crop.

2. Prima facie obviousness

Actual Example 1 (Japan, page 7) would appear to describe an embodiment within the scope of claim 1, at least as we interpret claim 1. Impure methacrylic acid is made by gas-phase catalytic oxidation. Thereafter, the methacrylic acid is passed through a column containing a strongly acidic

cation-exchange resin. We know that the "strongly acidic cation-exchange resin" contains sulfonic acid groups because Japan describes the use of "strongly acid cation-exchange resins having sulfonic acid groups" (Japan, page 4, second paragraph). Accordingly, it can be said that an organic sulfonic acid is added to the impure methacrylic acid. Thereafter, tetraethylene pentamine (an amine with at least one primary amino group) is added to the treated methacrylic acid followed by distillation.

Actual Example 21 (Japan, page 12) describes an embodiment which does not fall precisely within the scope of claim 1. Concentrated sulfuric acid is added to impure methacrylic acid. Distillation recovers a desired product to which is added tetraethylene pentamine, followed by another distillation. The difference between claim 1 and Actual Example 21 is that concentrated sulfuric acid is not an organic sulfonic acid. However, on page 4, Japan tells us that sulfuric acid, benzenesulfonic acid and p-toluenesulfonic acid, the latter two being organic sulfonic acids, may be used in the process. One skilled in the art would have no difficulty finding it entirely obvious to substitute either

benzenesulfonic acid or p-toluenesulfonic acid for sulfuric acid in Actual Example 21. The use of either benzenesulfonic acid or p-toluenesulfonic acid in place of sulfuric acid in Actual Example 21 would amount to nothing more than a use of a known material for its intended purpose in a known environment to accomplish an entirely expected result.

The bottom line is that Japan either anticipates or renders obvious the subject matter of claim 1.

3. Rebuttal evidence

Applicants assert that if one "digs" into their specification, one will discover a showing of unexpected results. Manifestly, evidence of unexpected results is relevant in an obviousness inquiry.

The examiner was not impressed. Explaining his lack of conviction with respect to applicants' showing, the examiner observes that "[t]here is no comparison between the addition of the two compounds [, i.e., the organic sulfonic acid and the amine,] 'one after the other' and/or 'jointly' as argued [by applicants] (Examiner's Answer, page 6). It is true, as the examiner held, that generally the closest prior art must be compared (id.). In re Baxter Travenol Lab., 952 F.2d 388,

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392, 21 USPQ2d 1281, 1285 (Fed. Cir. 1991) (when unexpected results are used as evidence of nonobviousness, the results must be shown to be unexpected compared with the closest prior art); In re Merchant, 575 F.2d 865, 869, 197 USPQ 785, 788 (CCPA 1978) (same). It is also true, as noted by the examiner, that a showing of unexpected results must be commensurate in scope with the breadth of the claims. In re Greenfield, 571 F.2d 1185, 1189, 197 USPQ 227, 230 (CCPA 1978) (showing of unexpected results must be commensurate in scope with breadth of claim); In re Kulling, 897 F.2d 1147, 1149, 14 USPQ2d 1056, 1058 (Fed. Cir. 1990) (same).

Here, Japan describes (1) two different methods within the scope of claim 1 and (2) the use of amines different from those used in applicants' showing, but within the scope of claim 1. The examiner make the observation (Examiner's Answer, page 6) that the specification showing is limited to the use of two amines. We have not found a cogent response to the examiner's observation. Hence, applicants seek to reap a crop of unexpected results considerably larger than what they have sown in the examples in the specification.

We agree with the examiner that the specification showing does not compare the closest prior art and that the showing is not commensurate in scope with the breadth of claim 1. Under the facts of this case, the showing, when considered together with Japan, does not establish non-obviousness; rather, the opposite is the case. In re Piasecki, 745 F.2d 1468, 1472, 223 USPQ 785, 788 (Fed. Cir. 1984) (if rebuttal evidence of adequate weight is produced, the holding of prima facie obviousness, being but a legal inference from previously uncontradicted evidence, is dissipated. Regardless of whether the prima facie case would have been characterized as strong or weak, the examiner must consider all of the evidence anew, citing In re Rinehart, 531 F.2d 1048, 1052, 189 USPQ 143, 147 (CCPA 1976) (facts established by rebuttal evidence must be evaluated along with the facts on which a prima facie case is based)).

C. Other issues

We make the following additional observations in the event of further prosecution by way of a continuation or otherwise.

1.

Applicants maintain that less deposits are left in the distillation column when their process is used. We note, however, that there is no limitation in the claim concerning the amount of deposits.

2.

Lest applicants become alarmed that we require too much in a claim, we have no hesitation in saying that an unexpected result need not necessarily appear in the claim.

We simply are hinting that if a deposits limitation had appeared in the claim, it would have been easier for applicants to maintain that their specification showing is commensurate in scope with the breadth of their claims. If a claim covers only "a low amount of deposits left in the distillation column", then embodiments in the prior art which describe (explicitly or inherently) large amounts of deposits become less significant in an obviousness analysis. In other words, there are two ways to deal with an examiner's commensurate in scope criticism. First, the claim may be limited to require the unexpected result. Second, a showing can be presented including a sufficient number of examples so

that one skilled in the art would conclude that when the broadly claimed invention is practiced, the unexpected result would generally be expected to be obtained. Applicants have done neither.

3.

Since we have concluded that Japan alone supports the examiner's rejection, we find it unnecessary to reach the examiner's alternative rejection based on Japan combined with the European Patent Application and the other Japanese Patent Application Document. If there is further prosecution and the examiner elects to rely on the other Japanese Patent Application Document, then a translation should appear in the record before any further appeal is taken to this board.

4.

We earlier noted that Japan refers to Japan Kokai 55-129239 (page 3). According to Japan, the Kokai describes purification of methacrylic acids with sulfonic acid group-containing compounds. The European Patent Application relied upon by the examiner describes the use of amines for the same purpose. A question in need of resolution in future

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prosecution is: In light of the Kokai and the European Patent Application, is there a basis for a rejection under the rationale of cases such as In re Kerkoven, 626 F.2d 846, 205 USPQ 1069 (CCPA 1980) (it is generally prima facie obvious to combine two compositions each of which is taught by the prior art to be useful for the same purpose in order to form a third composition which is also used for that purpose); In re Pinten, 459 F.2d 1053, 1055, 173 USPQ 801, 803 (CCPA 1972) (same); In re Dial, 326 F.2d 430, 432, 140 USPQ 244, 245 (CCPA 1964) (same); In re Crockett, 279 F.2d 274, 276, 126 USPQ 186, 188 (CCPA 1960) (same)?

5.

On this record, there is a plausible basis for declining to give any weight to applicants' specification showing of unexpected results. According to applicants' Example 1 comparison, use of just an amine resulted in extensive solid precipitation in the distillation column. In fact, if we are to believe applicants, it was so bad that the "plant had to be shut down after 3 hours." Of course, Example 1 contains no details about the "plant."

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Applicants' BASF colleague, Wilhelm Karl Schropp (the inventor named in the European Patent Application which is also assigned to BASF) would no doubt be at least minimally disappointed in the manner in which his colleagues impugn the integrity of the invention he describes in his European Patent Application. The invention described in the European Patent Application sought to overcome a process "during which the distillation column *** [becomes] rapidly covered with by-products, so that a flushing of the equipment is required after only a few days" (paragraph bridging pages 2-3). Thus, the invention described in the European Patent Application, at least inferentially, would require flushing less often than only a few days. But, even only a few days is more than the 3 hours mentioned in applicants' Example 1.

There may be an explanation for the apparent inconsistency between the European Patent Application and applicants' showing. Maybe the "plant" used to test the amines of the European Patent Application was more "modern" than that used by applicants. Neither plant is described in the record.

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Maybe, inventor Schropp had more incentive to succeed than did applicants. In other words, maybe applicants in presenting their comparison did not try hard enough to obtain a result consistent with the European Patent Application. Compare In re Reid, 179 F.2d 998, 1002, 84 USPQ 478, 481 (1950) (in no way reflecting on the good faith of the makers of the affidavits *** the failures of experimenters who have no interest in succeeding should not be accorded great weight); see also In re Michalek, 162 F.2d 229, 74 USPQ 107 (CCPA 1947).

In any event, the possible inconsistency between BASF's representations in the European Patent Application vis-a-vis their showing in this application demands some attention in any further prosecution.

D. Decision

Upon consideration of the record, and for the reasons given, it is

ORDERED that the decision of the examiner rejecting claims 1-10 as being unpatentable under 35 U.S.C. § 103 over Japan is affirmed.

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FURTHER ORDERED that it has not been necessary to
consider the examiner's additional rejections based on

- (1) Japan in combination with the European
Patent Application;
- (2) Japan in combination with the other
Japanese Patent Application Document and/or
- (3) Japan in combination with an admission in
applicants' specification.

FURTHER ORDERED that if there is further prosecution
of this application or a continuation, the examiner and
applicants may wish to consider the Other Issues discussed in
this opinion.

AFFIRMED.

SHERMAN D. WINTERS,
Administrative Patent Judge)
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WILLIAM F. SMITH,)

BOARD OF

PATENT

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	Administrative Patent Judge)	APPEALS
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	FRED E. McKELVEY, Senior)	
	Administrative Patent Judge)	

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Appendix 1

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Appendix 2

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Appendix 3

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cc (via First Class Mail):

KEIL & WEINKAUF
1101 Connecticut Avenue, N.W.
Washington, D.C. 20036